

CLAIMS

1. A method of screening for a compound for treating metastatic lesions of colorectal cancer or preventing metastasis of colorectal cancer, said method comprising the steps of:

(1) contacting a test compound with a polypeptide selected from the group consisting of:

(a) a polypeptide comprising the amino acid sequence encoded by a polynucleotide selected from the group consisting of MLXs 1-153;

(b) a polypeptide that comprises the amino acid sequence encoded by a polynucleotide selected from the group consisting of MLXs 1-153, in which one or more amino acids are substituted, deleted, inserted, and/or added and that has a biological activity equivalent to a protein consisting of the amino acid sequence encoded by the polynucleotide; and

(c) a polypeptide encoded by a polynucleotide that hybridizes under stringent conditions to a polynucleotide selected from the group consisting of MLXs 1-153, wherein the polypeptide has a biological activity equivalent to a polypeptide consisting of the amino acid sequence encoded by the polynucleotide selected from the group consisting of MLXs 1-153;

(2) detecting the binding activity between the polypeptide and the test compound; and

(3) selecting a compound that binds to the polypeptide.

2. A method of screening for a compound for treating metastatic lesion of colorectal cancer or preventing metastasis of colorectal cancer, said method comprising the steps of:

(1) contacting a test compound with a polypeptide selected from the group consisting of:

(a) a polypeptide comprising the amino acid sequence encoded by a polynucleotide selected from the group consisting of MLXs 1-153;

(b) a polypeptide that comprises the amino acid sequence encoded by a polynucleotide selected from the group consisting of MLXs 1-153, in which one or more amino acids are substituted, deleted, inserted, and/or added and that has a biological activity equivalent to a polypeptide consisting of the amino acid sequence encoded by the polynucleotide; and

(c) a polypeptide encoded by a polynucleotide that hybridizes under stringent conditions to a polynucleotide selected from the group consisting of MLXs 1-153, wherein the polypeptide has a biological activity equivalent to a polypeptide consisting of the amino acid sequence encoded by the polynucleotide selected

from the group consisting of MLXs 1-153;

(2) detecting the biological activity of the polypeptide of step (a); and

(3) selecting a compound that suppresses the biological activity of the polypeptide in comparison with the biological activity detected in the absence of the test compound.

5 3. A method of screening for a compound for treating metastatic lesion of colorectal cancer or preventing metastasis of colorectal cancer, said method comprising the steps of:

(1) contacting a test compound with a cell expressing one or more marker genes, wherein the marker genes are selected from the group consisting of MLXs 1-153; and

10 (2) selecting a compound that reduces the expression level of one or more of the marker genes.

4. The method of claim 3, wherein said cell expressing one or more marker genes comprises a colorectal cancer cell.

5. A method of screening for a compound for treating colorectal cancer or preventing metastasis of colorectal cancer, said method comprising the steps of:

15 (1) constructing a vector comprising the transcriptional regulatory region of a gene selected from the group consisting of MLXs 1-153 upstream of a reporter gene;

(2) transforming a cell with the vector of step (1);

(3) contacting a test compound with the cell of step (2);

(4) detecting the expression of the reporter gene; and

20 (5) selecting the test compound that suppresses the expression of the reporter gene compared to that in the absence of the test compound.

6. A kit comprising one or more detection reagents that respectively binds to one or more nucleic acid sequences selected from the group consisting of MLXs 1-153.

25 7. An array comprising one or more nucleic acids that respectively binds to one or more nucleic acid sequences selected from the group consisting of MLXs 1-153.

8. A method for treating metastatic lesion of colorectal cancer or preventing metastasis of colorectal cancer, said method comprising the step of administering a pharmaceutically effective amount of a compound that is obtained by the method according to any one of claims 1-5.

30 9. A method for treating metastatic lesion of colorectal cancer or preventing metastasis of colorectal cancer in a subject, said method comprising the step of administering to the subject a pharmaceutically effective amount of an antisense nucleic acids or small interference RNA against one or more genes selected from the group consisting of MLXs 1-153.

35 10. A method for treating metastatic lesion of colorectal cancer or preventing metastasis of colorectal cancer in a subject, said method comprising the step of administering to the

subject a pharmaceutically effective amount of an antibody or fragment thereof that binds to a protein encoded by a gene selected from the group consisting of MLXs 1-153.

11. A method for treating metastatic lesion of colorectal cancer or preventing metastasis of colorectal cancer in a subject, said method comprising the step of administering to the
5 subject a pharmaceutically effective amount of a polypeptide selected from the group consisting of (a)-(c), a polynucleotide encoding the polypeptide or a vector comprising the polynucleotide encoding the polypeptide:

(a) a polypeptide comprising the amino acid sequence encoded by a polynucleotide selected from the group consisting of MLXs 1-153 or fragment thereof;

10 (b) a polypeptide that comprises the amino acid sequence encoded by a polynucleotide selected from the group consisting of MLXs 1-153, in which one or more amino acids are substituted, deleted, inserted, and/or added and that has a biological activity equivalent to a protein consisting of the amino acid sequence encoded by the polynucleotide or fragment thereof; and

15 (c) a polypeptide encoded by a polynucleotide that hybridizes under stringent conditions to a polynucleotide selected from the group consisting of MLXs 1-153, wherein the polypeptide has a biological activity equivalent to a polypeptide consisting of the amino acid sequence encoded by the polynucleotide selected from the group consisting of MLXs 1-153 or fragment thereof.

20 12. A method for inducing an anti-tumor immunity, said method comprising the step of contacting with an antigen presenting cell a polypeptide selected from the group consisting of (a)-(c), or a polynucleotide encoding the polypeptide or a vector comprising the polynucleotide:

(a) selected from the group consisting of MLXs 1-153 or fragment thereof;

25 (b) a polypeptide that comprises the amino acid sequence encoded by a polynucleotide selected from the group consisting of MLXs 1-153, in which one or more amino acids are substituted, deleted, inserted, and/or added and that has a biological activity equivalent to a protein consisting of the amino acid sequence encoded by the polynucleotide or fragment thereof; and

30 (c) a polypeptide encoded by a polynucleotide that hybridizes under stringent conditions to a polynucleotide selected from the group consisting of MLXs 1-153, wherein the polypeptide has a biological activity equivalent to a polypeptide consisting of the amino acid sequence encoded by the polynucleotide selected from the group consisting of MLXs 1-153 or fragment thereof.

35 13. The method for inducing an anti-tumor immunity of claim 12, wherein the method further comprises the step of administering the antigen presenting cell to a subject.

14. A composition for treating metastatic lesion of colorectal cancer or preventing metastasis of colorectal cancer in a subject, said composition comprising a pharmaceutically effective amount of a compound that is obtained by the method according to any one of claims 1-5.
- 5 15. A composition for treating metastatic lesion of colorectal cancer or preventing metastasis of colorectal cancer in a subject, said composition comprising a pharmaceutically effective amount of an antisense nucleic acids or small interference RNA against one or more genes selected from the group consisting of MLXs 1-153.
- 10 16. A composition for treating metastatic lesion of colorectal cancer or preventing metastasis of colorectal cancer in a subject, said composition comprising a pharmaceutically effective amount of an antibody or fragment thereof that binds to a protein encoded by a gene selected from the group consisting of MLXs 1-153.
- 15 17. A composition for treating metastatic lesion of colorectal cancer or preventing metastasis of colorectal cancer in a subject, said composition comprising a pharmaceutically effective amount of a polypeptide selected from the group consisting of (a)-(c), a polynucleotide encoding the polypeptide or a vector comprising the polynucleotide:
- (a) a polypeptide comprising the amino acid sequence encoded by a polynucleotide selected from the group consisting of MLXs 1-153 or fragment thereof;
 - 20 (b) a polypeptide that comprises the amino acid sequence encoded by a polynucleotide selected from the group consisting of MLXs 1-153, in which one or more amino acids are substituted, deleted, inserted, and/or added and that has a biological activity equivalent to a protein consisting of the amino acid sequence encoded by the polynucleotide or fragment thereof; and
 - 25 (c) a polypeptide encoded by a polynucleotide that hybridizes under stringent conditions to a polynucleotide selected from the group consisting of MLXs 1-153, wherein the polypeptide has a biological activity equivalent to a polypeptide consisting of the amino acid sequence encoded by the polynucleotide selected from the group consisting of MLXs 1-153 or fragment thereof.